

WHAT IS CLAIMED IS:

1. An optical scanning apparatus comprising
deflecting means for deflecting a beam emitted from
light source means, and scanning optical means having
5 at least one scanning lens for causing the beam
deflected by said deflecting means to be imaged on a
surface to be scanned, wherein said at least one
scanning lens constituting said scanning optical means
has a plurality of positioning reference surfaces for
10 effecting the positioning of said scanning lens in the
direction of the optical axis thereof, and is disposed
so that a straight line linking the points on two
positioning reference surfaces together or a plane
formed by the points on three or more positioning
15 reference surfaces may be non-orthogonal to said
optical axis, and in a main scanning cross-section, the
shape of the effective portion of said scanning lens is
asymmetrical with respect to said optical axis.

20 2. An optical scanning apparatus according to
Claim 1, wherein the scanning lens of which the shape
of the effective portion in said main scanning cross-
section is asymmetrical with respect to said optical
axis is such that the effective length thereof in the
25 main scanning cross-section differs relative to said
optical axis.

3. An optical scanning apparatus according to Claim 1, wherein the scanning lens of which the shape of the effective portion in said main scanning cross-section is asymmetrical with respect to said optical axis is such that the meridional shape thereof is asymmetrical with respect to said optical axis.

4. An optical scanning apparatus according to Claim 1, wherein the scanning lens of which the shape of the effective portion in said main scanning cross-section is asymmetrical with respect to said optical axis is such that the effective length thereof in the main scanning cross-section differs relative to said optical axis and the meridional shape thereof is asymmetrical with respect to said optical axis.

5. An optical scanning apparatus according to Claim 1, wherein there are a plurality of scanning lenses each of which the shape of the effective portion in said main scanning cross-section is asymmetrical with respect to said optical axis.

6. An optical scanning apparatus according to Claim 1, wherein the plurality of positioning reference surfaces disposed on said at least one scanning lens are provided such that the optical axis is interposed therebetween.

7. An optical scanning apparatus according to Claim 1, wherein the plurality of positioning reference surfaces disposed on said at least one scanning lens are provided on the end portions of said scanning lens with the optical axis interposed therebetween, and two
5 or more of the positioning reference surfaces provided on the end portions of said scanning lens are provided separately from each other in a sub-scanning direction.

10 8. An optical scanning apparatus according to Claim 1, wherein said plurality of positioning reference surfaces are provided protrudingly from a configurational portion outside the effective lens portion of said scanning lens, and the amounts of
15 protrusion of said plurality of positioning reference surfaces from the configuration portion are substantially equal to one another.

9. An optical scanning apparatus according to
20 Claim 8, wherein said protruding positioning reference surfaces are cylindrically shaped.

10. An optical scanning apparatus according to Claim 8, wherein the ridgelines between said protruding
25 positioning reference surfaces and the side surfaces of said protruding positioning reference surfaces are formed with a taper.

11. An optical scanning apparatus according to Claim 1, wherein said plurality of positioning reference surfaces are provided on a configurational portion outside the effective lens area of said scanning lens and are formed on the same plane as said
5 configurational portion.

12. An optical scanning apparatus according to Claim 1, wherein said positioning reference surfaces
10 are orthogonal to said optical axis.

13. An optical scanning apparatus according to Claim 1, wherein the scanning lens of which the shape of the effective portion in said main scanning cross-section is asymmetrical with respect to said optical
15 axis is molded out of a plastic material.

14. An image forming apparatus comprising:
an optical scanning apparatus according to any
20 one of Claims 1 to 13;

a photosensitive member disposed on said surface to be scanned;

a developing device for developing an electrostatic latent image formed on said
25 photosensitive member by the beam scanned by said optical scanning apparatus as a toner image;

a transferring device for transferring said

developed toner image to a transferring material; and
a fixing device for fixing the transferred toner
image on the transferring material.

5 15. An image forming apparatus comprising:
an optical scanning apparatus according to any one
of Claims 1 to 13; and
a printer controller for converting code data
inputted from an external device into an image signal
10 and inputting it to said optical scanning apparatus.

15 16. An optical scanning apparatus comprising
deflecting means for deflecting a beam emitted from
light source means, and scanning optical means having
at least one scanning lens for causing the beam
deflected by said deflecting means to be imaged on a
surface to be scanned, wherein said at least one
scanning lens constituting said scanning optical means
has a hollow portion in at least one of configurational
20 portions outside an effective lens portion of said
scanning lens with the optical axis thereof interposed
therebetween, and a positioning reference surface for
effecting the positioning of said scanning lens in the
direction of the optical axis is formed on said hollow
25 portion.

17. An optical scanning apparatus according to

Claim 16, wherein said scanning lens does not have a hollow portion in the other configurational portion outside the effective lens portion with said optical axis interposed therebetween, and has a positioning reference surface on the other configurational portion outside the effective lens portion, and said positioning reference surface is formed on the same plane as said configurational portion.

18. An optical scanning apparatus according to Claim 16, wherein said scanning lens has a concave surface, and said positioning reference surface is formed on the concave surface side of said scanning lens.

19. An optical scanning apparatus according to Claim 16, wherein said positioning reference surface is formed on a surface opposite to an ejector pin.

20. An optical scanning apparatus according to Claim 16, wherein said scanning lens is molded out of a plastic material.

21. An image forming apparatus comprising:
an optical scanning apparatus according to any one of Claims 16 to 20;
a photosensitive member disposed on said surface

to be scanned;

a developing device for developing an
electrostatic latent image formed on said
photosensitive member by the beam scanned by said
5 optical scanning apparatus as a toner image;

a transferring device for transferring said
developed toner image to a transferring material; and

a fixing device for fixing the transferred toner
image on the transferring material.

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22. An image forming apparatus comprising:

an optical scanning apparatus according to any one
of Claims 16 to 20; and

a printer controller for converting code data
15 inputted from an external device into an image signal
and inputting it to said optical scanning apparatus.